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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,311	02/23/2004	Ronald J. Kerans	AFD552	2162

26902 7590 04/25/2006

DEPARTMENT OF THE AIR FORCE
AFMC LO/JAZ
2240 B ST., RM. 100
WRIGHT-PATTERSON AFB, OH 45433-7109

EXAMINER

SAVAGE, JASON L

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 04/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/784,311

Applicant(s)

KERANS ET AL.

Examiner

Jason L. Savage

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parthasarathy et al. (US 6,251,815) in view of Yang (US 5,549,151).

Parthasarathy teaches a thermal gradient resistant composite material containing fiber-reinforcements embedded in a matrix material having a hot side and a cool side (col. 2, ln. 6-35). Parthasarathy further teaches that the fiber reinforcement is graded by coefficient of thermal expansion (CTE) from the hot side to the cool by placing fibers having a higher CTE in one region and fibers having a lower CTE in the other (col. 2, ln. 6-35). Parthasarathy teaches that the preferred matrix materials are ceramics (col. 2, ln. 56-67), however it is silent to the thermal resistant composite material being a metal-ceramic composite.

Yang teaches that composite bodies exhibiting graded material properties such as graded thermal expansion coefficients can be formed by carefully selecting the materials used to form the composite (col. 14, ln. 10-24). Yang also teaches that a functionally graded composite material comprising a metal rich region and a ceramic rich region with a graded ceramic-metal zone there between provides desirable graded thermal expansion properties (col. 14, ln. 10-24).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the composite of Parthasarathy by substituting metal as the matrix material such as disclosed by Yang to form a graded composite with a reasonable expectation of success. One would have been motivated to make such a modification in order to further enhance the thermal gradient resistance of the fiber reinforced composite. Absent a teaching of the criticality or showing of unexpected results, the claimed composite would not provide a patentable distinction over the product of Parthasarathy as modified by Yang.

It is well settled that the test of obviousness is not whether the features of one reference can be bodily incorporated into the structure of another and proper inquiry should not be limited to the specific structure shown by the references, but should be into the concepts fairly contained therein, and the overriding question to be determined is whether those concepts would suggest to one of ordinary skill in the art the modifications called for by the claims, *In re Van Beckum*, 169 USPQ 47 (CCPA 1971), *In re Bozek*, 163 USPQ 545 (CCPA 1969); *In re Richman*, 165 USPQ 509 (CCPA 1970); *In re Henley*, 112 USPQ 56 (CCPA 1956); *In re Sneed*, 218 USPQ 385 (Fed. Cir. 1983).

In response to the issue whether the reference is nonanalogous art, it has been held that the determination that a reference is from a nonanalogous art is twofold. First, one decides if the reference is within the field of the inventor's endeavor. If it is not, one proceeds to determine whether the reference is reasonably pertinent to the particular problem with which the inventor was involved, *In re Wood*, 202 USPQ 171, 174. In the

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instant case, both Parthasarathy and Yang are generally drawn to composites exhibiting graded thermal expansion properties.

Regarding the limitation that the fiber in the hot region has a lower CTE than the fiber in the cool region in claim 2 and the fiber in the hot region has a higher CTE than the fiber in the cool region in claim 3, Parthasarathy teaches that fibers having a higher CTE should be used in the hot region when part is used at a temperature below a minimum-stress temperature (MST) and lower CTE fibers in the hot region when the part is used at a temperature above the MST (col. 4, ln. 24-51).

Response to Arguments

Applicant's arguments filed 1-17-06 have been fully considered but they are not persuasive.

Applicant argues that Pathasarathy does not teach the use of metal in forming the composite. Applicant states that the use of a metal region greatly enhances composite properties such as thermal conductivity and/or load bearing capacity however this argument is not commensurate in scope with the claims.

Applicant further argues that the method employed by Yang to form the metal ceramic composite having graded properties would preclude the formation of a side having a 100% ceramic composition. However, Yang is merely being provided as a teaching that it is known to form graded composites comprising a mixture of ceramic and metal materials. It would have been within the purview of one of ordinary skill in the

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art to employ a method which would provide the graded composite having a side containing 100% of the materials.

Applicant argues that the combination of the two references would not have been obvious since they are clearly nonanalogous art. However, as was set forth in the rejection above, the references are considered analogous art since both are generally drawn to composites exhibiting graded thermal expansion properties. As such, it would have been obvious to make the combination and modifications as described in the rejection above.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

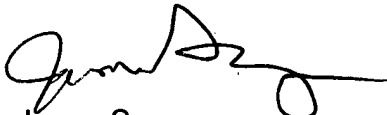
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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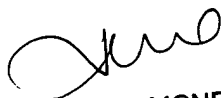
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Savage whose telephone number is 571-272-1542. The examiner can normally be reached on M-F 6:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jason Savage
4-6-06



JENNIFER C. MCNEIL
SUPERVISORY PATENT EXAMINER
4/8/06